



## Lower Savannah

### Environmental Quality Control District

Serving: Aiken, Allendale, Bamberg, Barnwell, Calhoun, and Orangeburg Counties

*Promoting Health, Protecting the Environment*

206 Beaufort Street, NE, Aiken, SC 29801  
(803) 641-7670 Fax (803) 641-7675

July 31, 2001

Town of Denmark  
Attn: Ms. Patricia Anduze  
131 S. Palmetto Avenue  
Denmark, South Carolina 29042

Re: Town of Denmark Sanitary Survey  
Water System # 0510002  
Bamberg County

Dear Ms. Anduze:

As you are aware, the South Carolina Department of Health and Environmental Control conducted a sanitary survey of Denmark's public water system on June 12, 2001. The intent of the sanitary survey is to evaluate Denmark's ability to provide a continuous supply of safe drinking water to its customers.

The Town of Denmark received an overall rating of **Needs Improvement**. Enclosed is a copy of the survey and a report which includes a description of Denmark's public water system, specific findings made during the sanitary survey, and recommendations for correcting any deficiencies. This survey and the report should be kept on file for no less than ten (10) years and be made available to the public or DHEC upon request. It is requested that all parties responsible for the operation and maintenance of the water system review this report promptly.

Please feel free to contact me at (803) 641-7670 if you should have any questions concerning the enclosed report.

Sincerely,

A handwritten signature in cursive script that reads 'Jennifer R. Hughes'.

Jennifer R. Hughes  
Drinking Water Manager  
Lower Savannah EQC

cc: Susan Alder, Bureau of Water

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL  
LOWER SAVANNAH EQC

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**SANITARY SURVEY REPORT**

*Town of Denmark  
Water System # 0510002  
Bamberg County*

**Introduction**

The South Carolina Department of Health and Environmental Control recently conducted a sanitary survey of the Town of Denmark public water system (Water System # 0510002). This survey consisted of a review of the Department files and an on-site inspection by Department personnel on June 12, 2001. The following persons participated in the on-site inspection:

Jennifer Hughes	SCDHEC - Lower Savannah EQC
Tim Freeman	Town of Denmark
JP Robinson	Town of Denmark

This report includes a description of the water system, a list of findings and recommendations noted during the survey.

**System Description**

The Town of Denmark owns and operates a groundwater facility and associated potable water distribution system that serves approximately 3800 customers by approximately 1493 service connections. Information on the system's wells are given in the table below. The system has a current rated capacity of 1,180,800 gallons per day.

*Well Information*

	Type	Horsepower	Yield	Regulated Capacity	Treatment
Well One Brooker Center	Turbine	60	530 gpm	508.80 TGD	Gaseous Chlorine
Well Two Voorhees	Turbine	60	400 gpm	384.00 TGD	Gaseous Chlorine
Well Three Clark Street	Turbine	60	300 gpm	288.00 TGD	Gaseous Chlorine

The Town of Denmark public water system is served by three (3) elevated storage tanks with a total volume of approximately 475,000 gallons.

### *Storage Capacity*

Tank	Capacity (gallons)
City Hall Elevated Tank	100,000
Nibco Elevated Tank	250,000
Voorhees Elevated Tank	125,000

Currently, the Town of Denmark public water system has two operators: Tim Freeman (D06651) and JP Robinson (D02418).

### Finding and Recommendations

- 1) The system was upgraded to a Satisfactory rating for Chemical Storage. It was noted that all wells disinfecting with gaseous chlorine are equipped with chlorine leak detection and alarm systems. The Department realizes the resources used to purchase and install the alarms. Recognizing the safety concerns associated with hazardous chlorine gas, the Department commends the system for its timely response in the installation of the alarms and the adherence to the *State Primary Drinking Water Regulations*.
- 2) The system maintained an Unsatisfactory rating for Fire Flow. The purpose of this item is to ensure that the water system can provide adequate flow to protect the integrity of their water system when fire protection is provided. Water systems must confirm their ability to provide fire protection by flow testing each fire hydrant a minimum of once every three years. The minimum flow for a hydrant for fire protection is 500 gpm. At the time of the survey, not all 176 hydrants had been flow tested within the past three years. Also the system has several substandard hydrants (i.e. flow less than 500 gpm). The substandard hydrants must be bagged or painted black and the fire department must be notified.
- 3) The system was downgraded to a Needs Improvement rating for Valve/Hydrant Maintenance. The purpose of this item is to ensure that a system's valves and hydrants are being maintained such that they may be located and operated as needed. The system has done a good job of showing all hydrants on a map. The system has also done a good job with using individual index cards as records for the hydrants and valves. At the time of the survey, the system was still working on identifying all the valves in the system. It is also required that valves be exercised on a yearly basis and records kept of the maintenance. The Department looks forward to seeing a complete valve and hydrant program at the next survey.
- 4) The system maintained a Satisfactory rating for Flushing Program. It was noted that the system is flushing and keeping appropriate documentation. It is requested that the system establish a written program that describes when the system flushes and a description of the flushing activities.

- 5) The system was downgraded to a Needs Improvement rating for Leak Detection and Repair Program. The system needs to implement a water audit. A water audit is a comparison of the amount of water produced with the amount of finished water sold plus the amount of water used for flushing, fire fighting activities, etc. A system should keep the average loss to no more than 10%. During the survey it was evident that the system has all the necessary components for a water audit, it just needs to be implemented and properly documented.
- 6) The system was downgraded to a Needs Improvement rating for Sample Siting Plan. The current sample siting plan needs to be updated to include a current map of the distribution system and a detailed description of how the sampling plan will be carried out.
- 7) The system maintained a Needs Improvement rating for Storage Appurtances. The overflows on all three elevated storage tanks need to be extended within 12 to 24 inches of ground surface. The overflows should be addressed during the next scheduled tank maintenance periods.
- 8) The system maintained a Needs Improvement rating for Storage Maintenance. As noted in the previous survey, the Nibco tank has substantial rust on the exterior of the tank. The tank needs exterior painting and the interior needs to be evaluated. It is requested that the system submit to the Department a complete maintenance plan and schedule for addressing all storage tank deficiencies.
- 9) The following are items that the system needs to address appropriately:
  - The Clark Street Well needs to have a splash pad or similar structure installed under the blowoff.
  - At the Voorhees Well the leak on the line that returns water to the turbine pump needs to be repaired.
  - The door on the chlorine room at the Voorhees Well needs to be replaced.
  - There was a discussion during the survey of addresses changing with the installation of 911 services. Please note that once this is done the system map and sample siting plan will need to be updated to reflect the changes.

### Conclusions

Within ninety (90) days the Town of Denmark should submit to the Department a plan and schedule for coming into compliance with all survey items with ratings of Needs Improvement and Unsatisfactory listed above. During the survey it was evident the Town of Denmark is in a transitional period. It is important for the system to devote the time and resources needed to address the listed deficiencies. The Department would like to thank Tim Freeman and JP Robinson for their assistance in conducting the sanitary survey. The Department looks forward to working with the town in the future to ensure that the residents of Denmark continue to receive the highest quality of drinking water.